Chapter 18

Prosociality in Rural America: Evidence from Dictator, Ultimatum, Public Goods, and Trust Games

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In phase 1 of the Roots of Human Sociality Project, we had no fully market-oriented societies represented from the developed world, but we did have a U.S. student population (Henrich and Smith 2004). In an effort to broaden our market integration spectrum, we chose to include a town in rural Missouri as our representative population from the developed world. We also included another U.S. student population (chapter 9, this volume, available at: http://www.russellsage.org/Ensminger) to create a baseline for comparison with both this study and studies of other university populations.

The levels of prosociality demonstrated in the Missouri games were markedly higher than what we are used to seeing in experiments with U.S. undergraduates. It is now well documented that age affects prosociality levels all the way up to and through the college years (Fehr, Bernhard, and Rockenbach 2008; Harbaugh, Krause, and Liday 2002; Sutter and Kocher 2007), thus calling into question the representativeness of university undergraduate populations in inferences about social norms across a population. John List (2004) also finds a substantial impact for age over the entire life cycle.

Other studies among nonstudent populations in the developed world have also found high levels of prosociality similar to those reported here for each of the games, so it does not appear that this population is merely an exceptional outlier. These findings contribute to a growing body of evidence that finds both high levels of prosociality in developed societies compared with less-developed societies and significant differences between student and nonstudent populations, nonstudents being markedly more prosocial.

In this chapter, we present experimental results from the dictator game (DG), the strategy method ultimatum game (UG), the public goods game (PG), and the trust game. We find the highest levels of prosociality in our world sample. The striking finding from these games is that this rural U.S. population demonstrated consistently high prosociality across all measures in all games: offers, returns, and rejections of low offers at cost to the individual. Indeed, in the DG (mean offer = 47 percent) and the UG (mean offer = 48 percent), because there was virtually no variation in offer behavior, it is not possible to test for any demographic effects. Consistent with the high prosocial behavior that we observe in the offers across all four games, we also find high rejection rates in the strategy method UG, with close to 30 percent of the sample rejecting offers of 40 percent. From the PG, we see overall high offers (mean = 62 percent), and perhaps even more impressive, 36 percent of the population contributed 100 percent of their stake to the common pot. In the trust game, we have evidence of both considerable trust (high player 1

offers of 63 percent) and considerable trustworthiness (high player 2 returns of 173 percent). These findings are particularly interesting because they come from a rural population of relatively modest economic means: 12 percent of the sample had household incomes below the U.S. poverty line. Given that this rural Missouri population is also in the midwestern Bible Belt, with near-universal belief in a world religion, these findings are directly in line with the overall results of this volume. This population has highly developed market institutions, its religious orientation is toward a world religion, and it demonstrated consistently high prosociality across a range of diverse experiments.

ETHNOGRAPHIC BACKGROUND OF HAMILTON, MISSOURI

Our U.S. sample is drawn from the small town of Hamilton, Missouri, a community that is not only representative of many rural towns across America but also small enough, with a population of 1,800, that most town folks either know all the other individuals in town personally or at least have some acquaintance with all the families. This quality made the site ideal for comparison with the other small communities that we sampled from the developing world.

Kathleen Cook conducted fieldwork in Hamilton, Missouri, in 1989, 1990, 1991, 1995, 2000, and 2001, and this ethnographic description draws on her extensive ethnographic knowledge of the community (for more details, see Cook 1993). Hamilton is in the northwestern part of the state, about seventy miles from Kansas City. It is situated in an area of rolling hills with rich prairie soils that historically supported a robust farming economy. The agricultural base of the region diminished during the twentieth century, declining rapidly in the 1980s. Today transfer payments (Social Security and various forms of social welfare) comprise the largest source of income in the county, and wage labor has replaced farming; the population is aging as young people leave for jobs in nearby urban areas.

Hamilton developed as the commercial center of Caldwell County. It was served by both the railroad and a federal highway, and its once-thriving main street was a market for the farming population of the region. Elderly residents of the town recall stores staying open until 11:00 PM on Saturday nights when farmers came to town to trade and socialize. Today Main Street in Hamilton is empty on nights and weekends, and its mobile population follows interstate highways to retail centers in nearby urban areas. Storefronts that once housed hardware, dry goods, or farm supply stores have been replaced by gift shops, antique malls, and restaurants catering to tourists and day visitors. The town has capitalized on its link to J. C. Penney, whose boyhood home has been moved to the center of town and restored. A museum houses memorabilia relating to Penney's life in Hamilton and the early development of his commercial enterprise. Caldwell County also attracts Mormon pilgrims traveling to nearby holy sites—the places where Mormons settled in the nineteenth century before being driven west.

Although part of the economic base is dependent on tourists, town residents still buy groceries and gas locally, meet for coffee or lunch in Main Street cafés, and buy insurance and real estate from local agents. They send their children to Hamilton schools, attend Chamber of Commerce and Lions Club meetings, play golf or swim at the municipal facilities, and see each other frequently in church and on the streets. Hamilton is typical of villages elsewhere in the country. Residents are linked by blood, marriage, and proximity. They share their small-town locality, a fund of local information, and norms about how to conduct life in a small community.

Hamilton residents do not routinely share economic resources, but they do contribute to the material and emotional welfare of community members who suffer a loss: a family burned out of their home, for instance, or a young mother widowed by an accident. Neighborly support in a crisis is a hallmark of community life.

Cheap information is another characteristic of village life. Residents trade information formally through their organizations and publications, but more often informally through gossip and face-to-face meetings in town. It is not easy to hide good news, bad news, or behavior in a small town, and the rapid spread of gossip through the many connections in the community ensures that secrets are shared rather quickly. This cuts two ways. People who do not conform to local norms suffer the psychic punishment of being gossiped about, and even ostracized, by fellow community members, but the common knowledge that people hold about each other also includes information about who is trustworthy and reliable. At the time of this research in 2001, there are no check-cashing cards in Hamilton. Merchants know whose checks they can safely cash.

Being trustworthy and unassuming are highly valued in Hamilton. These norms are institutionalized in the practices of the town. Citizens who contribute their time and money to community endeavors without calling attention to themselves or appearing to have self-interested motives are considered upstanding and trustworthy. People are friendly when meeting on the street, greetings are always exchanged, and understatement is the rule. Behavior that hints of arrogance and boasting will activate the gossip channels. Community service clubs have memberships that cut across most occupations, and there is an emphasis on the equal standing of community members, even a fiction that hiding wealth makes everyone equal. A merchant's success depends on living a modest lifestyle, refraining from flaunting wealth, and avoiding high visibility. People who deviate from the norms might, in a charitable moment, be termed "different" but are more commonly assumed to be gaining at the expense of others ("lining their own pockets").

These norms are so commonly practiced that appearance and demeanor do not usually distinguish the wealthy from their less-prosperous neighbors. Wealthy residents avoid expensive cars, clothes, houses, and other signs of their material success. They join the informal coffee groups that meet several times a day in the cafés and gas stations around town to hash over issues of local importance. On any morning a coffee group might include the usual set of retired farmers and town residents, plus the banker, a retired executive, and someone from the newspaper. Banter and insult are conversational devices in the coffee group. Frequent joking is one of the ways in which residents reinforce their connections, while pointing out the frailties of their peers.

Residents of Hamilton live in a reinforcing milieu. Although many Hamiltonians work outside town, their connections to their neighbors are strengthened through interactions in schools and churches, recreational activities, and frequent meetings on Main Street. The regularity of informal meetings provides a mechanism by which information and editorial opinions are freely shared, thus bolstering the inclusiveness of community membership while at the same time making clear the behavior that is expected of members.

SAMPLE RECRUITMENT AND EXPERIMENTAL METHODS

These experiments were conducted in July 2001 by both authors, together with two local research assistants and one nonlocal university undergraduate. The dictator, strategy method ultimatum, public goods, and trust games were run over a five-day period.

Running experiments in the United States presents enormous challenges for subject recruitment. Americans are busy, leery of con schemes, and especially suspicious of invitations that sound like one could earn money "for nothing." We developed strategies to try to get around these problems and recruit a high percentage of townspeople in the hope of drawing a diverse and representative sample. We succeeded in drawing fully 20 percent of the entire adult population of Hamilton, Missouri, which was all that we needed to fulfill our target.[1] We attribute the success of our subject recruitment to our prior ethnographic contact with the population and

to the fact that we worked through important community members, thereby building the trust necessary to convince people to turn out for the experiments. We also put considerable planning into the timing and logistics of the games to make attendance easy.

After publicizing the games with the help of local research assistants and members of community-wide organizations, we recruited players from diverse socioeconomic and demographic groups in the town using open enrollment and snowball sampling that targeted different subsectors of the society. The participation of high-status residents, including the bank president and prominent members of the Lions Club, encouraged other prosperous residents to participate; we had feared that the town elite would be the most difficult to attract, and we began recruitment by attending a local Lions Club meeting to explain the project and sign up local leaders. We also recruited participants by walking Main Street, standing in the local grocery store, going door to door, attending coffee groups at the local diners, visiting the local prison to sign up staff workers there, and visiting the part-time workers at the local glove factory, one of the lowest socioeconomic strata in town. The economic development assistant who staffed the telephone at the Penney Museum (a clearinghouse for information) encouraged interested, but cautious, residents to participate by vouching for the research team. Open enrollment was so successful that demand for inclusion in the games surpassed our need for players. All games were one-shot games, and each game was run with a fresh set of players.

Snowball sampling and self-selection are never the most ideal methods for generating a truly representative sample. One could conjecture that those who agree to participate in a research project are more likely to be civic-minded and inclined toward prosocial norms. We cannot rule this out; however, the opposite is equally plausible. Once word got out that people were earning significant amounts of money in these games, there may have been a tendency for those with more materialistic inclinations to sign up. If this was the case, it did not show up as differences in play behavior over the course of our five days of games.

Rural Missouri served as the pilot site for our overall project, in part to help us decide which games to run. As a consequence, the series of games that we ran was different than that which we chose for the final protocol of the project; the third-party punishment game was not conducted at the pilot stage. Because these experiments were conducted prior to the development of the final protocol for the cross-cultural project, there are some important differences between how the dictator and ultimatum games were run and the methodology for the rest of the project. In Hamilton, the DG and UG were run with different players rather than in sequence with the same players. The UG was run using the strategy method; however, player 2s were asked what their minimum acceptable offer (MinAO) would be rather than what their specific responses to each possible offer would be. This means that there are no data on rejection of offers above 50 percent, as all agreed to accept at least 50 percent. For comparison's sake, we note that among U.S. undergraduates (see chapter 9, this volume, available at: http://www.russellsage.org/Ensminger) there were no rejections of hyper-fair offers in the UG.

The games run in other villages around the world purposely employed simplified visuals involving the manipulation of real coins and bills to help clarify the arithmetic associated with the game payoffs. These visuals were not employed with the U.S. sample owing to the subjects' high education levels. In a meta-analysis of dictator games, Christoph Engel (2011) found a highly statistically significant positive correlation between offers and player 1s who handled coins or notes. Those who handled cash gave substantially more on average and were both less likely to give nothing and more likely to give everything. If this difference biased the offers at our other sites upward, it means that our overall cross-cultural results for our correlations with market orientation would have been even stronger, as we find the highest offers in the Hamilton site, where money was not handled in the dictator, ultimatum, or trust games.

The only other difference between the Hamilton games and those of other sites concerns the demographic data that were collected. Because we had not yet finalized the overall project survey instrument, some questions used in the group project were not asked, while many other demographics not collected elsewhere were collected here. Religious affiliation was not collected individually from the subjects. However, we were able to return to our local assistants, who had helped to recruit subjects and organize the games, and ask them about the players' religious affiliation from their personal knowledge of them. They reported that all of the subjects were Christian, and this is how they were coded in the database: no denominations were recorded. This classification is consistent with the fact that there were no foreign names among the players, and none that suggested Judaic or Muslim origin. Hamilton is in the heart of the rural midwestern Bible Belt. The market integration survey to calculate percentage of the diet purchased in the market was also not conducted in Missouri; this population was coded as 100 percent market-integrated. In most other respects, we followed the protocols developed for this pilot and subsequently adopted for the broader project, including the scripts and the protocol for the logistics of isolating and moving players through the game.

Table 18.1 presents the summary demographic statistics from the 2000 U.S. census for Hamilton and the demographics of our samples for each of the games. Comparing the overall game sample to the census data, we can see that we sampled more women (61 percent versus 54 percent) than were present in the population at large. We also oversampled married individuals (71 percent versus 57 percent). In contrast, our income data match the overall demographics of the population quite nicely, for both individual income and household income. We take up the specifics of individual game samples later, in our discussion of each game.

Figures 18.1 through 18.6 present the sample distributions for the Hamilton subjects who participated in the games. These distributions represent the six control variables used in the regression analyses.

THE DICTATOR GAME RESULTS

The stakes in the dictator game were set to be roughly equivalent to the daily minimum wage, or $50, which worked out nicely for decimal divisions of the currency. The show-up fee was set at $20, which was deliberately set higher than the target of 20 percent for the project games. This was a concession to the U.S. environment, where time is scarce, and where we feared that anything less than $20 would not be sufficient remuneration in the event that a player received nothing in the game. If anything, an increase in the stake size relative to that at other sites might have taken the pressure off player 1 to make a high offer, but that is not how the Hamiltonians played. These stakes appeared to be about right for getting people's attention with a meaningful (nontrivial) amount of money.

In table 18.1, we see the demographics for the sample population that played each game compared to the demographics for Hamilton derived from U.S. census data. The sample playing the dictator game was younger (median age of thirty-seven) than the samples for all of the games (median age of forty-two), and they were also younger than the median adult age in Hamilton, which was forty-seven. Although the individual incomes and household incomes among this sample were quite similar to those of the population at large, based on the census data, the median household wealth was considerably higher than that for the samples playing the other games ($68,500 versus $30,000 for the players of all games). The subjects playing the DG were also more likely to be married (82 percent) than Hamiltonians generally, according to the census data (57 percent), and the sample of players for all of the games (71 percent). However, the demographics for those who played the ultimatum game were considerably different from

(Text continues on p. 454.)

TABLE 18.1 *Hamilton Demographics, by Game*

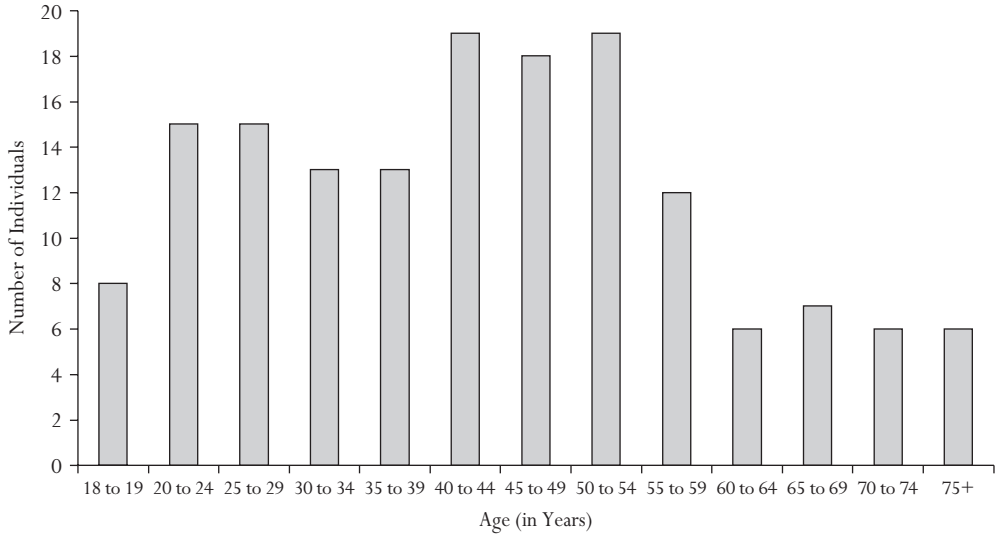
	Hamilton 2000 U.S. Census Data		All Games		Dictator Game		Ultimatum Game		Public Goods Game		Trust Game	
Variable	N	Value	N	Value	N	Value	N	Value	N	Value	N	Value
Age (adults over eighteen only)—median	1,324	47	157	42	28	37	54	45	25	41	50	45
Female (percentage)	1,813	54	157	61	28	54	54	61	25	68	50	62
Years of education (median)	1,813	12	157	14	28	14	54	12	25	12	50	14
Household size (median)	744	2	153	3	28	3	53	2	23	3	49	3
Individual income of player (median)[a]		21,667	157	20,000	28	25,000	54	20,000	25	20,000	50	20,000
Total household income (median)[b]	735	32,560	156	35,000	28	35,000	54	35,000	24	45,000	50	45,000
Total household wealth (median)			157	30,000	28	68,500	54	15,000	25	15,000	50	44,500
Married (percentage)	1,379	57	157	71	28	82	54	65	25	76	50	70
Own home (percentage)	744	66	150	75	21	75	54	76	25	68	50	78
Length residence this town (median)			154	28	28	19	51	34	25	22	50	29
Number of computers in household (median)			148	1	28	1	45	1	25	1	50	1
Frequency of Internet use per month (median)			157	4	28	12	54	1	25	1	50	12
Frequency of listening to radio news per month (median)			146	1	28	7	43	12	25	1	50	1
Frequency of listening to TV news per month (median)			147	20	28	12	44	20	25	20	50	20
Number of local papers subscribed home (median)			156	1	28	1	53	1	25	1	50	2

Source: Authors' calculations based on author data and U.S. Census Bureau (2000).

[a]Individual income data were collected by asking players to check an income range ($0 to $4,999; $5,000 to $9,999; $10,000 to $14,999; $15,000 to $24,000; $25,000 to $34,999; $35,000 to $44,999; $45,000 to $74,999; and over $75,000). We assigned the midpoint of the selected range to each individual.

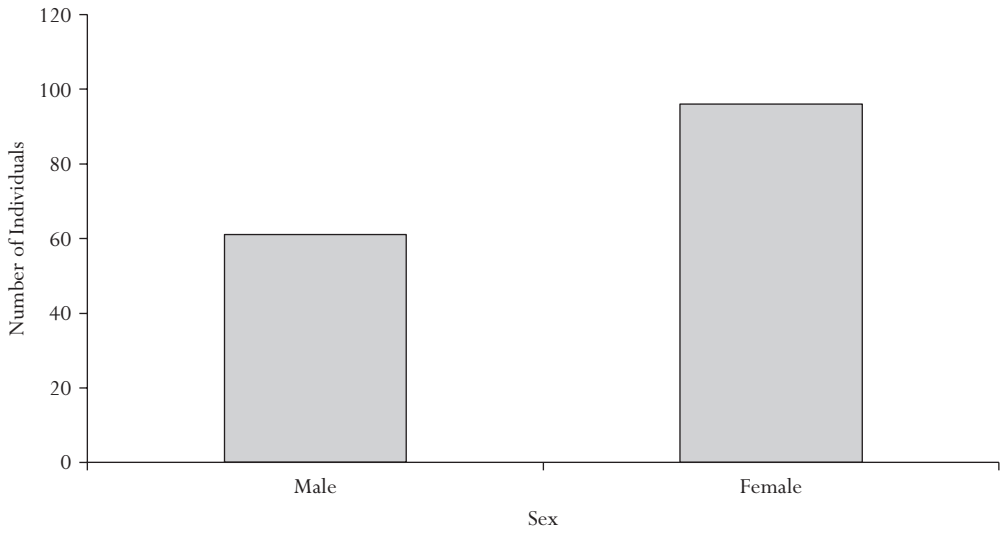
[b]Household income ranges were in increments of $10,000 from $0 to $50,000 and increments of $25,000 from $50,000 to $100,000; the top range was over $100,000.

FIGURE 18.1 *Hamilton Age Distribution*



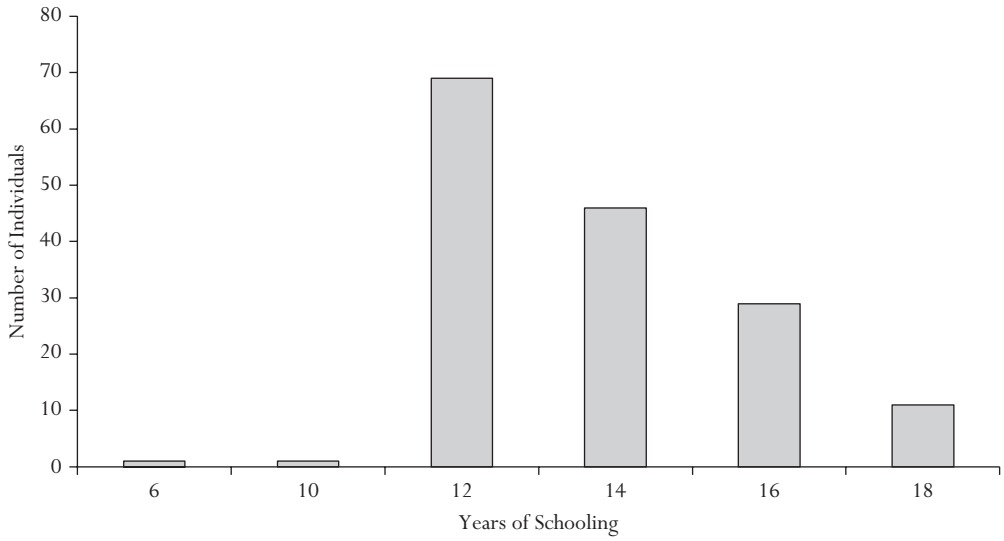
Source: Authors' calculations based on author data.

FIGURE 18.2 *Hamilton Sex Distribution*



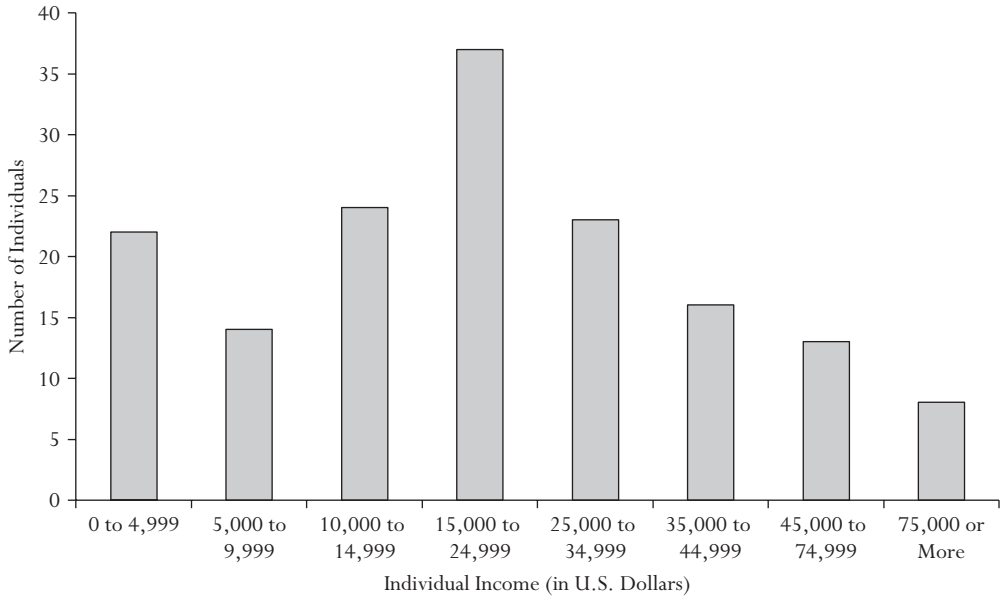
Source: Authors' calculations based on author data.

FIGURE 18.3 *Hamilton Education Distribution*



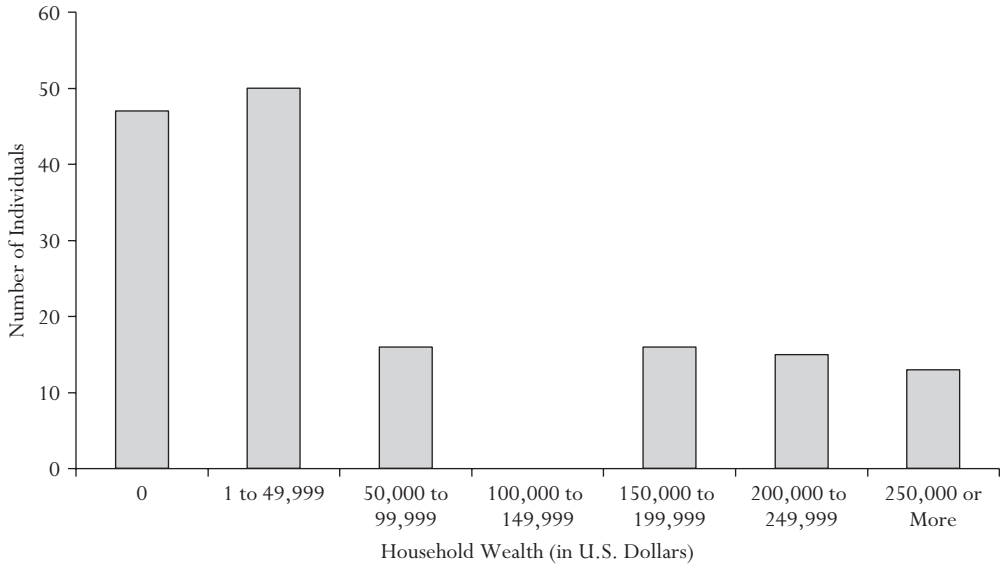
Source: Authors' calculations based on author data.

FIGURE 18.4 *Hamilton Individual Income Distribution*



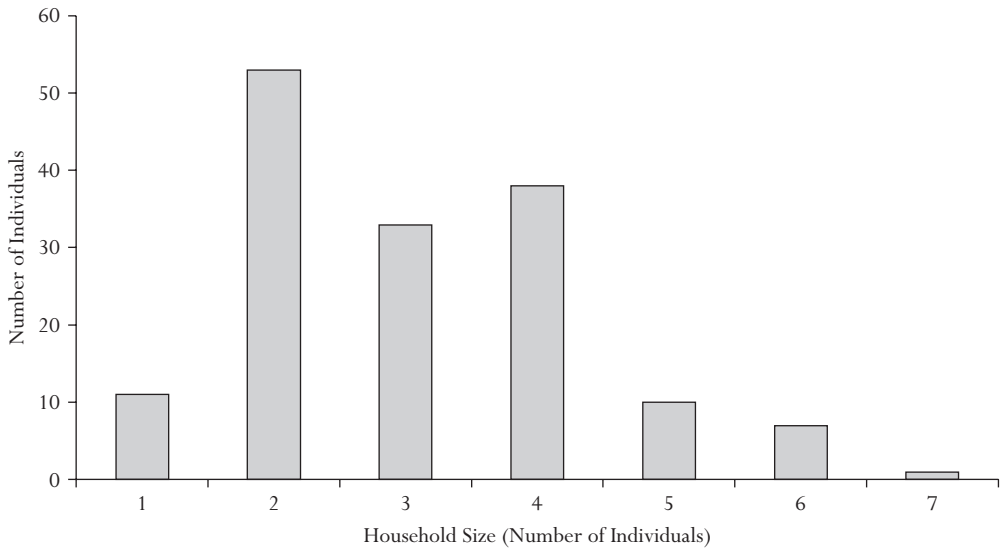
Source: Authors' calculations based on author data.

FIGURE 18.5 *Hamilton Household Wealth Distribution*



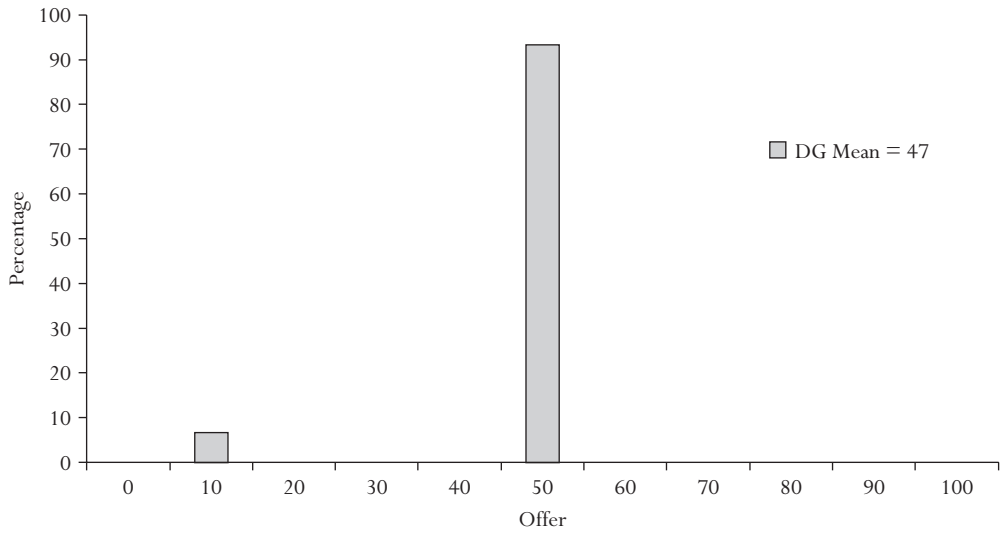
Source: Authors' calculations based on author data.

FIGURE 18.6 *Hamilton Household Size Distribution*



Source: Authors' calculations based on author data.

FIGURE 18.7 *Dictator Game Offers (N = 15)*



Source: Authors' calculations based on author data.

those for the DG players. Notably, the UG subjects better matched the demographics of both the census data and the pool of overall game players. Given that the behavior of players in the DG and the UG was similar, while the demographics were different, it does not appear that the skew in the demographics of the DG sample biased our results. We revisit the discussion of demographics when we discuss the UG offers.

In figure 18.7, we see the distribution of offers in the dictator game. The DG results are striking for their uniformity. All but one player out of fifteen gave 50 percent. Given that there was virtually no variation in the sharing behavior, the demographic differences that we see in figures 18.1 to 18.6 appear to have no impact on prosocial behavior in the dictator game.

Although these DG results are strikingly different from what is usually reported for university undergraduate student populations (see chapter 9, this volume, available at: http://www.russellsage.org/Ensminger_Chapter7.pdf), they are in line with increasing numbers of reports from researchers who have sampled nonstudent populations in developed societies. Consistently, nonstudent populations have been shown to demonstrate far higher levels of prosocial behavior than students, as we find here. In a recent meta-analysis of DG results, Engel (2011, 597) reports that "students are much more likely to give nothing, and they are less likely to choose the equal split, or to even give everything." In Engel's data, the differences are extreme at offers of 0 percent (about 40 percent for students; 10 percent for nonstudents), 50 percent (about 15 percent for students; 30 percent for nonstudents), and 100 percent (about 5 percent for students; 15 percent for nonstudents).[2]

Two recent studies specifically compare dictator game results for student populations with those for nonstudent populations in the United States. Jeffrey Carpenter, Stephen Burks, and Eric Verhoogen (2005) compared a relatively affluent college population, a less-affluent community college population, and blue-collar employees at a Kansas City distribution center. In the

dictator game, the Kansas City workers were more generous than the students at either college; their mean offers were 45 percent versus 25 percent for the more-affluent undergraduates and 33 percent for the less-affluent. Mitchell Hoffman and John Morgan (2011) specifically set out to test the proposition that selection pressures among businesspeople reduce or eliminate prosocial choices, as put forth by Steven Levitt and John List (2007), who have also argued that student samples most likely exaggerate the level of prosociality in economic experiments. Hoffman and Morgan found just the opposite. They purposely chose businesspeople from two professions that might be expected to self-select for highly competitive individuals: the pornography industry and the Internet. They found that Internet businesspeople contributed over 250 percent more in the dictator game than did Berkeley undergraduates (Hoffman and Morgan 2011, 19). In another version of the DG, they found that students gave on average 14 percent of their stake, while adult professionals gave 39 percent (10).

We turn now to the ultimatum game results, which provide further evidence of prosocial behavior among this Missouri population.

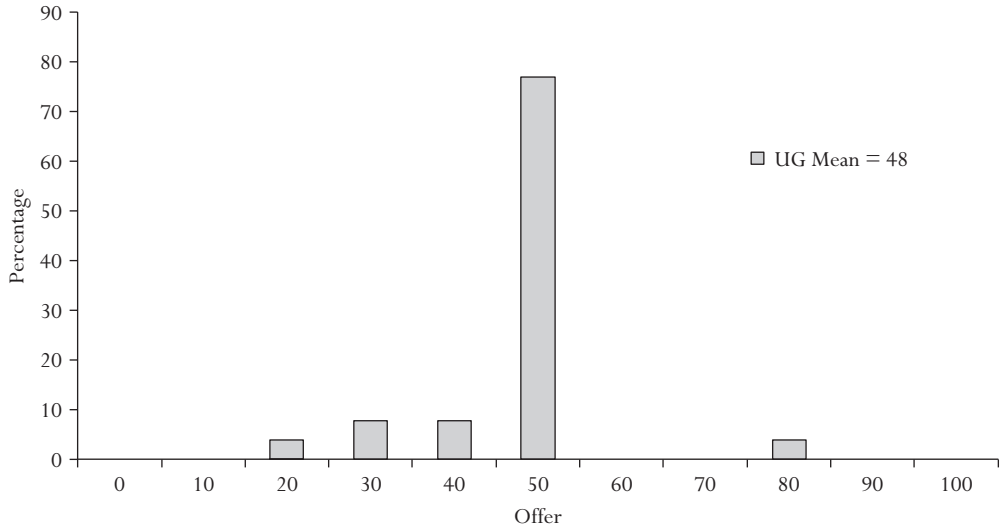
THE STRATEGY METHOD ULTIMATUM GAME

Like the dictator game, the strategy method ultimatum game was played for a stake of $50 and a show-up fee of $20. The strategy method UG was run prior to the finalization of the design of the core games for the cross-cultural project. As a consequence, these games differed slightly from those run in other sites. First of all, the Hamilton players used in this UG did not also play the DG; this ultimatum game was a stand-alone game. Fresh players were used in each of the two sessions. Second, player 2s were asked what their minimal acceptable offer was, rather than asked to respond to every conceivable offer from 0 to 100. Given that no one rejected 50 percent, we have no data on rejections of hyper-fair offers, so it is not possible to test whether this sample exhibits the U-shaped rejection function observed in some sites. We do know that there was no such tendency among our U.S. undergraduate population (chapter 9, this volume, available at: http://www.russellsage.org/Ensminger_Chapter9.pdf), from whom we elicited rejection responses for the full range of offers from 0 to 100. The ultimatum game was run in two sessions, and an odd number of players turned up for each session. In both sessions, we used the extra player as a player 2, who played against a randomly chosen offer selected from among the player 1 offers.

In figure 18.8, we see that the offers in the UG were quite similar to those made in the DG, with a mean of 48 percent versus 47 percent in the DG, and close to double the sample size. These UG results (with close to double the sample size) parallel the high DG results. This compares to a mean of 41 percent from Hessel Oosterbeek, Randolph Sloof, and Gijs van de Kuilen's (2004, 177) meta-analysis of UG results from twenty-eight U.S. studies (including both student and nonstudent populations). Among the Kansas City workers from a distribution center used in Carpenter, Burks, and Verhoogen's (2005) ultimatum game experiment, the average UG offer was 45 percent. Natalie Henrich and Joseph Henrich (2007, 163) also report UG offers among an immigrant U.S. population in Detroit with a mean of 41 percent and a strong mode at 50 percent, with over 50 percent of the players offering 50 percent.

Referring back to the demographics from table 18.1, we find that the median age and percentage married for the UG players were far more in line with both the average sample demographics for all game players and with the Hamilton census demographics than was the case for the much smaller sample who played the DG. The median household wealth of those who played the UG was actually below the median household wealth of players for all games, which is the

FIGURE 18.8 *Strategy Method Ultimatum Game Offers (N = 26)*



Source: Authors' calculations based on author data.

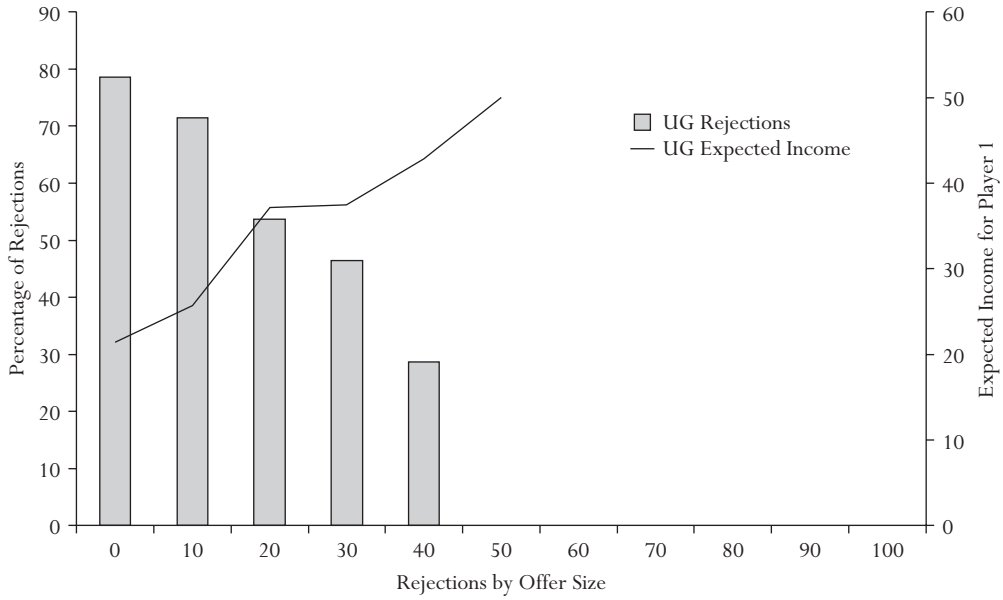
opposite of the median wealth among DG players. Given that the offers were extremely high and showed low variance across both games, it would appear that the skew in the demographic distributions did not have an impact on game behavior. As was the case with the DG, there is not sufficient variance in the offers to run regression analyses for the UG.

In figure 18.9, we provide the rejection data for player 2 in the strategy method ultimatum game. These data are consistent with the general pattern of prosocial behavior among the U.S. sample. Close to 30 percent of the sample rejected offers as high as 40 percent. The income-maximizing offer (IMO) at this site was 50 percent, which is consistent with the fact that fully 77 percent of the players offered 50 percent.

We calculate the minimum acceptable offer in the strategy method UG by coding the highest offer that a player 2 was willing to reject, thus ensuring that neither player 2 nor player 1 received any of the game proceeds. We note in figure 18.9 that close to 30 percent of the sample were prepared to reject offers of even 40 percent, representing extremely vigilant behavior regarding fairness. However, since there was also considerable variation in behavior, we were able to run regressions on the sociodemographic predictors of MinAOs. In table 18.2, we see the regression results.

In the basic model, we control for age, sex, education, individual income, household wealth, and household size. Given the small sample size, we dropped all insignificant variables one by one, beginning with the least significant. Just as none of our demographic controls predict variations in offer behavior, none predict the minimum acceptable offer. During the game, a number of players who said they would reject 40 percent offers volunteered that anything less than a full 50 percent, which they referred to as the only fair offer, was completely unacceptable. This sentiment, or something close to it, appears to have been shared widely across the demographic spectrum of the subject population.

FIGURE 18.9 *Strategy Method Ultimatum Game Rejections (Player 2)*



Source: Authors' calculations based on author data.

THE PUBLIC GOODS GAME

Twenty-five new individuals played a public goods game in one session. Each player was provided with an envelope and ten $5 bills ($50 total); no additional show-up fee was paid. They were told that they would be playing the game with four other individuals in the room, but they did not know which other four they were playing with until the final distribution. All players understood that they would be ushered into a private room where they could put as much or as little of the $50 into the envelope as they chose. Whatever they kept remained theirs to be concealed privately. Once all players had finished their play, they were called into a separate room five at a time. The envelopes of the players in that group of five were shuffled so that none of the players knew whose was whose. The envelopes of the five players were opened and counted, and the total amount was doubled. The money was then divided equally among the five players. The envelopes were coded in such a way that the experimenter could privately match the survey results to the amount in each envelope.

In figure 18.10, we see that the contributions in this game were widely dispersed, with the exception that everyone put at least something in the common pot, and there was a strong mode at 100 percent: 36 percent of the players chose to put their entire stake into the pot. Mean contributions for the whole group were 62 percent.

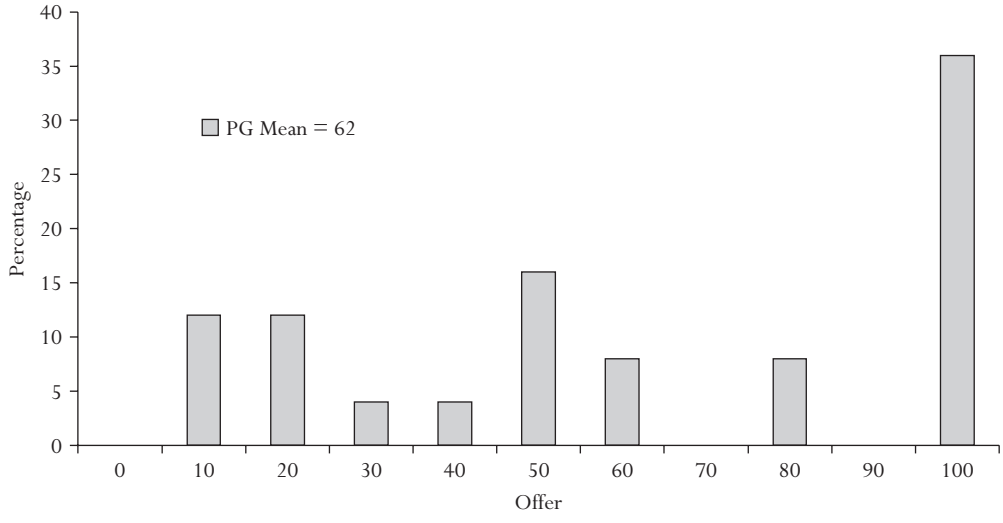
It is difficult to compare public goods experiments because so many parameters vary, including country, student versus nonstudent subjects, number of rounds, number of players, and type of reward. With that caveat, in Jennifer Zelmer's (2003) meta-analysis of public goods experiments, she found a mean contribution of 37.7, which places the results from the PG played in Hamilton (mean = 62 percent) very high on the scale.

TABLE 18.2 *Linear Regressions of Minimum Acceptable Offers in the Ultimatum Game*

Variable (Divided by Standard Deviation)	(1)	(2)	(3)	(4)	(5)	(6)
Age	−0.13	−0.14	−0.13	−0.08		
	(0.27)	(0.24)	(0.23)	(0.20)		
Female dummy	−2.12	−2.05				
	(8.0)	(8.0)				
Education	0.34					
	(2.61)					
Individual income	−0.0004	−0.0004	−0.0004	−0.0004	−0.0004	−0.0004
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Household wealth	0.00005	0.00005	0.00005			
	(0.0001)	(0.0001)	(0.0001)			
Household size	−2.00	−2.08	−2.15	−1.91	−1.16	
	(3.89)	(3.65)	(3.64)	(3.51)	(3.01)	
Constant	43.92	48.69**	46.98**	45.07**	39.92***	35.19
	(42.85)	(16.99)	(14.62)	(14.27)	(9.70)	(5.80)
Observations	27	27	27	27	27	28
Model significance	0.70	0.58	0.45	0.43	0.34	0.17
Adjusted R-squared	0.12	0.12	0.12	0.11	0.11	0.08

Source: Authors' calculations based on author data.
Note: Corrected standard errors are in parentheses.
***Coefficient significant at < 0.01 level in two-tailed test
**Coefficient significant at < 0.05 level in two-tailed test

FIGURE 18.10 *Public Goods Game*



Source: Authors' calculations based on author data.

TABLE 18.3 *Linear Regressions of Offers in the Public Goods Game*

Variable (Divided by Standard Deviation)	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.87	0.36				
	(0.72)	(0.45)				
Female dummy	−24.32*	−24.03*	−24.04*	−14.64		
	(11.82)	(11.92)	(12.35)	(13.78)		
Education	3.59	3.04	3.51	4.45	3.89	
	(3.07)	(3.21)	(3.02)	(2.92)	(3.25)	
Individual income	−0.0007*	−0.0008**	−0.0007*	−0.0005	−0.0004	−0.0004
	(0.0004)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Household wealth	−0.0001					
	(0.0001)					
Household size	5.22	6.60	5.62			
	(5.28)	(5.04)	(5.31)			
Constant	1.84	21.48	31.79	25.02	20.39	71.71
	(34.64)	(37.46)	(39.77)	(42.34)	(44.41)	(10.10)
Observations	23	23	23	25	25	25
Model significance	0.0007***	0.001***	0.015**	0.15	0.28	0.21
Adjusted R-squared	0.31	0.28	0.26	0.14	0.10	0.06

Source: Authors' calculations based on author data.
Note: Corrected standard errors are in parentheses.
***Coefficient significant at < 0.01 level in two-tailed test
**Coefficient significant at < 0.05 level in two-tailed test
*Coefficient significant at < 0.10 level in two-tailed test

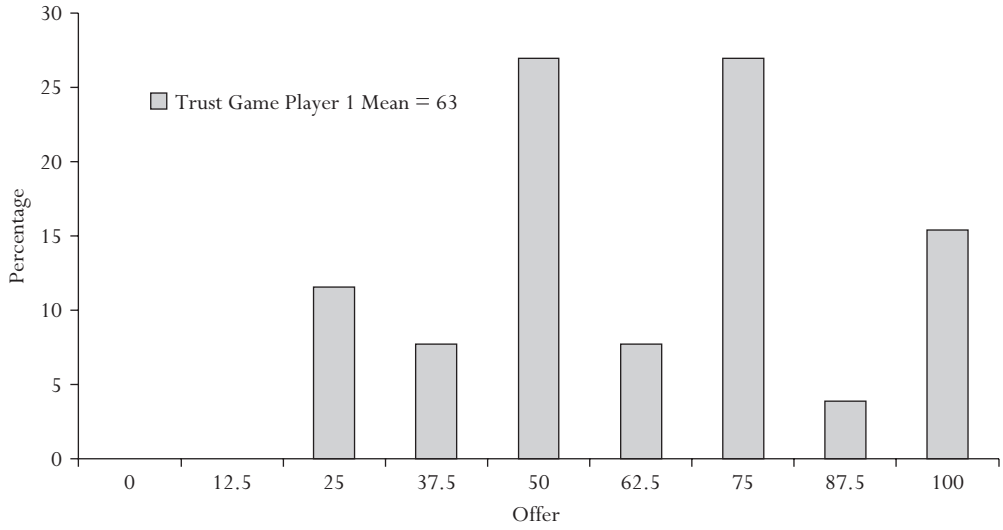
The demographics of those who played the public goods game are shown in table 18.1. They do not differ markedly from those of the overall sample of game participants. Given the variance in this game, we are able to run regression analyses on the offers, which are shown in table 18.3. We begin by controlling for age, sex, education, individual income, household wealth, and household size, then dropping the least significant variable in each successive model. In this case, income and gender are marginally significant at the 0.1 level with most of the control variables in the model. Neither of these variables is stable, however, and once the other insignificant variables are dropped, they lose even their marginal significance.

THE TRUST GAME

We played two sessions of the modified Berg, Dickhaut, and McCabe (1995) trust game. Both players were endowed with $40 each. Player 1 was invited to offer any portion of his or her stake (in $5 increments) to player 2 and keep the balance. Player 1's offer was tripled and presented to player 2. Player 2 had the option of returning any amount of the tripled transfer from him- or herself back to player 1, keeping any remaining balance, together with the original show-up fee. Player 1's offer provides a measure of trust, while the amount returned by player 2 provides a measure of trustworthiness.

In table 18.1, we find the demographics for the players of the trust game in relation to those who played all games and the census data for Hamilton. The data fall generally in line with what we have seen for the other games, but both household income and household wealth are on the slightly high side. The individual income of the players is in line with both the census data and of the demographics for all other game players.

FIGURE 18.11 *Trust Game Offers (Player 1; N = 26)*



Source: Authors' calculations based on author data.

In figure 18.11, we see the actual offers of the player 1s. There are strong modes at 50 percent and 75 percent, and a lesser mode at 100 percent. The stakes in this game were high. In the event of a fully cooperative player 1 and a fully cooperative player 2 who split the surplus equally with player 1, the take-home for each player was $80, including player 2's initial stake of $40. Alternatively, if player 1 sent player 2 his or her full stake and player 2 kept it all, player 2 went home with $160 ($40 from his or her original stake, plus the tripling of player 1's stake of $40). This was a lot of money in Hamilton, and comments from the players bore this out. As the decision dilemma sunk in for one player 2 confronted with the prospect of taking home $160, she remarked in dead seriousness, "That is a set of new tires; I need new tires."

There is sufficient variance in trust game offers to run regression analyses, though the sample size is small. In table 18.4, we see that education is positively correlated with trust, while females are less trusting. Both results have substantial coefficients, and education is fairly robust against most control variables, with significance at $p < 0.05$.

In figure 18.12, we see the player 2 responses in the trust game. The percentage returns for player 2 represent the percentage of player 1's original offer that player 2 returned to player 1. For example, if player 1 offered $20 (50 percent of the original stake of $40), player 2 received $100 ($60 from player 1 after the tripling, plus his or her own original stake of $40). For both players to take home the same amount, player 2 had to return $40 to player 1 (200 percent of player 1's original transfer of $20); then both player 1 and player 2 would take home $60. A return of 200 percent by player 2 was the modal behavior, and it represents an exact split of the surplus from the tripling.

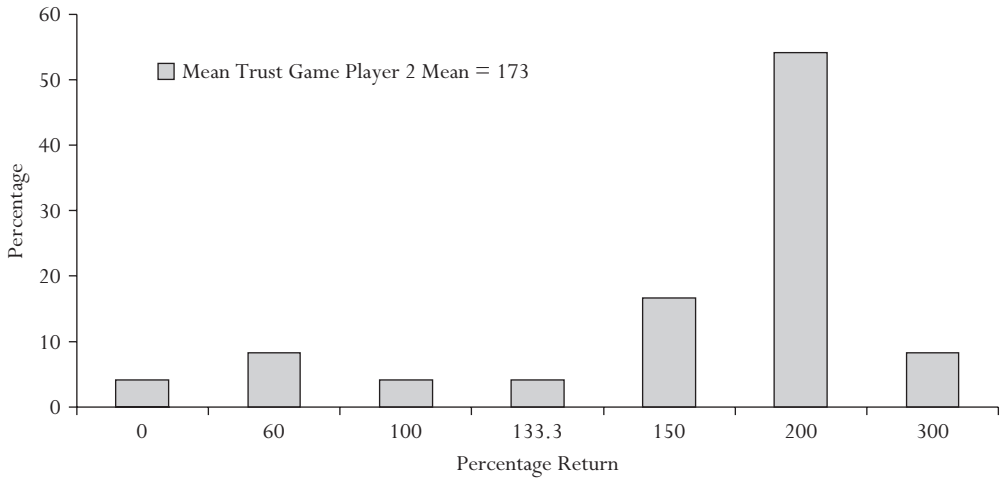
In table 18.5, we see the regressions on player 2 behavior to identify the correlates of trustworthiness. In addition to the six demographic control variables, we added the percentage received from player 1, since the level of trust proffered by player 1 may affect the level of return by player 2 in the trust game. In this study, the level of player 1's trust was not a significant variable

TABLE 18.4 *Linear Regressions of Offers in the Trust Game (Player 1)*

Variable (Divided by Standard Deviation)	(1)	(2)	(3)	(4)	(5)
Age	0.19	0.17			
	(0.38)	(0.34)			
Female dummy	−18.94	−18.64*	−19.53*	−17.35*	−19.64**
	(10.61)	(10.00)	(9.41)	(8.68)	(8.53)
Education	5.06**	5.08**	4.97**	4.28**	4.41**
	(2.26)	(2.17)	(2.12)	(1.94)	(1.94)
Individual income	−0.0003	−0.0003	−0.0003		
	(0.0004)	(0.0004)	(0.0004)		
Household wealth	−0.000002				
	(0.00001)				
Household size	4.69	4.63	3.57	2.18	
	(4.51)	(4.40)	(3.92)	(3.30)	
Constant	−8.09	−8.12	4.16	9.78	15.04
	(41.15)	(39.48)	(27.91)	(30.88)	(28.87)
Observations	25	25	25	25	26
Model significance	0.07*	0.04**	0.02**	0.01***	0.005***
Adjusted R-squared	0.31	0.31	0.30	0.27	0.26

Source: Authors' calculations based on author data.
Note: Corrected standard errors are in parentheses.
***Coefficient significant at < 0.01 level in two-tailed test
**Coefficient significant at < 0.05 level in two-tailed test
*Coefficient significant at < 0.10 level in two-tailed test

FIGURE 18.12 *Trust Game Returns (Player 2; N = 24)*



Source: Authors' calculations based on author data.

TABLE 18.5 *Linear Regressions of Returns in the Trust Game (Player 2)*

Variable (Divided by Standard Deviation)	(1)	(2)	(3)	(4)	(5)
Percentage received from player 1	−0.39	−0.39	−0.37	−0.04	0.210
	(0.70)	(0.68)	(0.65)	(0.45)	(0.42)
Age	3.81**	3.82**	3.93***	3.31**	2.46*
	(1.60)	(1.53)	(1.38)	(1.24)	(1.26)
Female dummy	1.73				
	(27.78)				
Education	2.63	2.57			
	(6.61)	(6.74)			
Individual income	−0.0007	−0.0007	−0.0006		
	(0.001)	(0.0008)	(0.0008)		
Household wealth	−0.0001	−0.0001	−0.0001	−0.00009	
	(0.00007)	(0.00007)	(0.00007)	(0.00006)	
Household size	29.64***	29.66***	30.75***	28.41***	25.72***
	(7.93)	(7.77)	(7.94)	(7.00)	(6.91)
Constant	−52.83	−50.90	−24.29	−33.45	−24.38
	(94.32)	(94.67)	(58.86)	(56.27)	(58.71)
Observations	24	24	24	24	24
Model significance	0.07	0.04	0.01	0.006	0.007
Adjusted R-squared	0.50	0.50	0.49	0.46	0.39

Source: Authors' calculations based on author data.
Note: Corrected standard errors are in parentheses.
***Coefficient significant at < 0.01 level in two-tailed test
**Coefficient significant at < 0.05 level in two-tailed test
*Coefficient significant at < 0.10 level in two-tailed test

predicting player 2's behavior, and the regressions change little whether they are run with or without this control. Age and household size are both correlated with trustworthiness, and household size carries a considerable coefficient and holds a statistical significance of $p < 0.01$ across all controls. It is intuitively reasonable that those who live in larger households have learned more about how to internalize the behavior of reciprocating trust. However, the correlate does not hold, as we saw earlier: those in larger households did not demonstrate any greater tendency to trust.

Noel Johnson and Alexandra Mislin (2011) have compiled a comprehensive meta-analysis of trust experiments around the world. Their paper drives home exactly how difficult it is to make comparisons among the many versions of trust game experiments we now find in the literature. Two of the parameters that seem most crucial for making proper comparisons are whether or not player 2 was endowed, and whether the subjects were students or nonstudents. Joyce Berg and her colleagues (1995) chose to endow player 2s in their original experiment; any failure to do so greatly changes the equity calculations for both players, so it is not appropriate to make comparisons across this protocol change. We can also expect that there are differences in trust and trustworthiness (both measures of prosociality) between student and adult populations, as we have already seen for the other games.

One of the trust experiments most relevant for comparison to this one is that of Armin Falk and Christian Zehnder (2007), who, like us, report on a trust experiment from the developed world (Zurich, Switzerland). This trust experiment was modeled on the Berg experiment: player 2 was endowed, and the subjects were drawn broadly from the city of Zurich (not from a university population). The findings are presented rather differently from those we see here. The

trust behavior mean is about 66 percent (Falk and Zehnder 2007, 9 and 24), and the trustworthiness response is approximately 175 percent (13 and 26). These results are virtually identical to our results of 63 versus 173 percent. Just as was the case in this study, the return behavior documented by Falk and Zehnder come close to the pure equity result, represented by a 200 percent return. Compared to the player 1 mean behavior of 54 percent and the player 2 mean response of 90 percent in the original experiment by Berg and her colleagues (1995) with students, we see that these two nonstudent populations demonstrate considerably higher prosociality.

CONCLUSIONS

The message from these experiments is quite straightforward. Across the dictator, strategy method ultimatum, public goods, and trust games, we have extremely high and consistent measures of prosociality for this rural U.S. population of nonstudents. This tendency holds for the offers in all games, for the rejection behavior in the UG (where 30 percent rejected offers of even 40 percent), and for the trustworthiness of player 2s in the trust game (who nearly equally split the surplus with their partners). We were able to run regression analyses only on the public goods and trust games because there was virtually no variation from the modal offer of 50 percent in both the DG and the UG. Our regression analysis pointed to education being positively correlated with trust and women being less trusting than men. However, the sample sizes were small, and the lack of robust results across games for our demographic variables suggests that the real story is the degree of consistency in high prosociality across all demographic categories.

Although the results from all of the games demonstrate higher offers than we are used to seeing in the literature for student populations on university campuses in Western societies, there are now increasing numbers of other studies from nonstudent populations in the developed world that report similar levels of prosociality. Together with those studies, these results appear to contradict the speculation of Levitt and List (2007) that the behavior of student subjects may *overestimate* the level of prosociality in the real world. Based on this growing body of evidence, it now appears that results from student laboratories *underestimate* the true level of prosociality in the real world. This has now been documented here for rural America, by Falk and Zehnder (2007) for urban Europe (Zurich, Switzerland), by Henrich and Henrich (2007) for an urban U.S. population, and in a variety of U.S. business communities (Carpenter, Burks, and Verhoogen 2005; Hoffman and Morgan 2011). Finally, the results from Hamilton, Missouri, are completely consistent with the major findings of this volume. As the society with the highest market integration of our sampled sites, together with deep roots in a world religion, this rural U.S. community produced data that fall in line with the overall patterns we see across societies around the world.

We wish to thank the Russell Sage Foundation for generous research support that made the Missouri portion of these experiments possible.

NOTES

1. These numbers include participants in two other games: a simplified trust game that was piloted and abandoned in favor of the design employed here and a double-blind dictator game (for results from the latter game, see chapter 5).
2. The percentage offers reported here are estimates based on approximate readings off of printed charts in Engel (2011).

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